

AMENDED CLAIMS

received by the International Bureau on 29 august 2005 (29 08 2005): original claims 1-20 have been replaced by amended claims 1-19

What is claimed is:

1. A method of determining the flow of traffic on a monitored route segment comprising:
 - obtaining and storing location information for a plurality of assisted global positioning system enabled cellular traffic probes;
 - determining the speed of each of the plurality of cellular traffic probes based on the stored location;
 - selecting a subset of the plurality of cellular traffic probes corresponding to probes having a location in the monitored route segment; and
 - determining the traffic flow for the monitored route segment on the basis of the determined speed of the probes in the selected subset.
2. The method of claim 1 wherein the step of determining the speed includes determining the speed of each of the plurality of probes based on the stored location and historical data.
3. The method of claim 1 wherein the step of obtaining includes requesting location information from a location based service platform.
4. The method of claim 3 wherein requesting location information includes transmitting a request over a virtual private network to a cellular carrier location based service platform.
5. The method of claim 1 wherein the step of storing the location information includes storing a probe identifier, a timestamp and a probe location in a database.
6. The method claim 2 wherein the step of determining the speed includes determining a distance traveled by each probe having a database entry with a most recent timestamp since a previous timestamp, and dividing the determined distance by the time between timestamps.
7. The method of claim 1 wherein the step of determining the speed includes obtaining a velocity vector from the location information.
8. The method claim 1 wherein the step of determining the speed includes determining a direction of travel for each probe having a database entry.

9. The method of claim 8 wherein the step of determining a direction includes comparing a most recently stored location to a previously stored location.
10. The method of claim 1 wherein the step of selecting a subset includes selecting all probe locations in a defined area.
11. The method of claim 8 wherein the step of selecting a subset includes selecting all probe locations in a defined area having a defined determined direction of travel.
12. The method of claim 1 wherein the step of determining the traffic flow includes grading the traffic flow in accordance with the speed of the selected subset of probes.
13. The method of claim 1 further including the step of filtering the selected subset to remove outlying probe values prior to the step of determining the traffic flow.
14. The method of claim 13 wherein the step of filtering includes determining a distribution of the probes in the subset, and removing from the subset any probe having speed more than two standard deviations from the normal of the distribution.
15. The method of claim 13 wherein the step of filtering includes determining an average speed of the probes in the subset, and removing from the subset any probe having a speed more than a predetermined amount away from the determined average speed.
16. A system for monitoring and determining the flow of traffic on a monitored route segment, the system comprising:
 - a location fetcher for obtaining and storing location information for a plurality of assisted global positioning system enabled cellular traffic probes;
 - a location processor for determining the speed of each of the plurality of cellular traffic probes; and
 - a mapping engine for selecting a subset of the plurality of cellular traffic probes corresponding to probes having a location in the monitored route segment and for determining a traffic flow rating on the basis of the determined speed of the probes in the selected subset.

17. The system of claim 16 wherein the location information includes position and velocity vectors.
18. The system of claim 16 wherein the location fetcher includes a location based service platform interface for connecting to a location based service platform to request and receive location information for the plurality of assisted global positioning system enabled cellular traffic probes.
19. The system of claim 16 wherein the mapping engine includes a filter for selecting a subset of the plurality of probes corresponding to probes having a location in the monitored route segment, a speed within a ranged determined in accordance with the speed of other probes in the subset, and a predetermined direction.

STATEMENT UNDER ARTICLE 19(1) (RULE 36.4)

No new matter has been added by way of this amendment under Article 19 of the PCT. Clear support for these amendments is found in the specification as originally filed. In fact, claim 1 has been amended to include the limitation of original claim 3. Original claim 3 has been removed. Claim 16, originally claim 17, has been amended so that the location better recites that data is obtained "for a plurality of *assisted* global positioning system enabled cellular traffic probe" (emphasis added). Further amendments have been made to address the minor formality and clarity issues raised by the International Examiner.

As noted by the International Examiner, original claims 3 and 19 were acceptable under PCT Article 33(2). The Applicant notes that no reference teaches the combination of assisted GPS cellular telephones and traffic monitoring systems. All references that indicate the existence of assisted GPS cellular telephone handsets make use of other types of traffic probes, typically dedicated traffic probes. Thus, the claims are submitted to be novel and patentable.